Electronic Version

Stylesheet Version v1.1.1

Claims

[c1] 1. A method of motion detection for a 3D comb filter video decoder, suitable for use in a National Television Standards Committee (NTSC) system, comprising:

sampling a composite video signal to obtain and register a plurality of sampling data $F_m P_{x,y}$, wherein $F_m P_{x,y}$ represents a sampling data of the composite video signal from the m^{th} frame in x^{th} line at y^{th} pixel; and

judging whether the composite video signal to be a motion state or a still state, according to the sampling data of $F_{m+1} P_{x,y}$, $F_m P_{x,y}$, $F_{m-1} P_{x,y}$, and $F_{m-2} P_{x,y}$.

[c2] 2. The method ofmotion detection recited in claim 1, wherein the step of judging whether the composite video signal to be the motion state or the still state comprises:

using the sampling data of $F_{m+1} P_{x,y}$, $F_m P_{x,y}$, $F_{m-1} P_{x,y}$, and $F_{m-2} P_{x,y}$ to calculate and obtain a plurality of maximum differences $MD_{x,y}$, wherein $MD_{x,y}$ represents the maximum difference for the y^{th} pixel in the x^{th} line;

selecting the maximum differences for any adjacent four pixels to take an average, for obtaining a plurality of motion factors $MF_{x,y}$, wherein $MF_{x,y}$ represents the motion factor for the y^{th} pixel in the x^{th} line; and

detecting the motion factor $MF_{x,y}$ to judge whether the composite video signal to be the motion state or the still state.

[c3] 3. The method ofmotion detection recited in claim 2, wherein the step of sampling the composite video signal comprises using a sampling frequency, which is four times of a subcarrier signal of the composite video signal, to sample, wherein the subcarrier signal is sampled at phase angles of 0, 0.5π, π, and 1.5π.

[c4] 4. The method ofmotion detection recited in claim 3, wherein the $MD_{x,y}$ is calculated by $MD_{x,y}=Max\{|F_m P_{x,y}-F_{m-2} P_{x,y}|, |F_{m+1} P_{x,y}-F_{m-1} P_{x,y}|\}$.

[c5] 5. The method ofmotion detection recited in claim 4, wherein the $MF_{x,y}$ is obtained by:
selecting the maximum differences for any adjacent four pixels including the $MD_{x,y}$, and taking an average, so as to obtain a plurality of averaged maximum differences $AMD_{x,h}$, wherein the $AMD_{x,h}$ represents the average maximum differences for the h^{th} pixel of the x^{th} line, in which h is a positive integer, and a calculation formula of $AMD_{x,h} = (MD_{x,h} + MD_{x,h+1} + MD_{x,h+2} + MD_{x,h+3}) / 4$ is used; and
taking a minimum from the averaged maximum differences, so as to obtain a motion factor $MF_{x,y}$, wherein $MF_{x,y}$

represents the motion factor for the y^{th} pixel of the x^{th} line.

[c6] 6. The method ofmotion detection recited in claim 5, wherein a minimum is obtained from a number of the adjacent averaged maximum differences and the $MF_{x,y}$ is obtained by

MFx,y = Min(AMDx,y, AMDx,y-1, AMDx,y-2, AMDx,y-3).

[c7] 7. The method ofmotion detection recited in claim 5, wherein a minimum is obtained from a number of the adjacent averaged maximum differences and the $MF_{x,y}$ is obtained by

$MF_{x,y} = Min(AMD_{x,y}, AMD_{x,y-3})$.

[c8] 8. The method ofmotion detection recited in claim 5, wherein the step of detecting the motion factor $MF_{x,y}$ to judge whether the composite video signal to be the motion state or the still state for the y^{th} pixel in the x^{th} line comprises:

providing a threshold value; and

comparing the $MF_{x,y}$ with the threshold value, wherein the y^{th} pixel in the x^{th} line of the composite video signal is judged as the motion state when the $MF_{x,y}$ is greater than the threshold value, otherwise the still state is judged.

[c9] 9. The method ofmotion detection recited in claim 8, wherein the $MF_{x,y}$ is the motion factor for the m^{th} frame.